U.S. Department of Agriculture
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INVESTIGATIONS OF WOODCOCK, SNIPE, AND RAILS IN 1952

SPECIAL SCIENTIFIC REPORT: WILDLIFE No. 18

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
CANADA DEPARTMENT OF RESOURCES AND DEVELOPMENT
CANADIAN WILDLIFE SERVICE

LIST OF PREVIOUS SPECIAL SCIENTIFIC REPORTS

1. "Migration of Some North American Waterfowl - A Progress Report on an Analysis of Banding Records." John W. Aldrich, August 1949.

2. "Waterfowl Populations and Breeding Conditions - Summer 1949 with Notes on Woodcock and Wilson Snipe." Walter F. Crissey, December 1949.

3. "A Punch-card System Suitable for Use with Small Samples in Wildlife Management and Research." Lowell Adams, April 1950.

4. "Experiments in the Marking of Seals and Sea-lions." Victor B. Scheffer, April 1950.

5. "A Fish and Wildlife Survey of Guatamala." George B. Saunders and Ancil D. Hollaway, June 1950.

6. "Japanese Fur Sealing." Oliver L. Austin, jr. and Ford Wilke, September 1950.

7. "Waterfowl Habitat Management in the Tennessee Valley." John H. Steenis, November 1950.

8. "Waterfowl Populations and Breeding Conditions - Summer 1950." C. S. Williams, April 1951.

9. "Chronic Toxicity of Some New Insecticides to Bob-white Quail." J. P. Linduska and Paul Springer, June 1951.

10. "Effects of DDT on Saltmarsh Wildlife, 1949." Paul Springer and John R. Webster, June 1951.

11. "Movements of Coyotes from and to Yellowstone National Park." W. B. Robinson and M. W. Cummings, December 1951.

12. Not Published.

13. "Waterfowl Populations and Breeding Conditions - Summer 1951." Walter F. Crissey, January 1952.

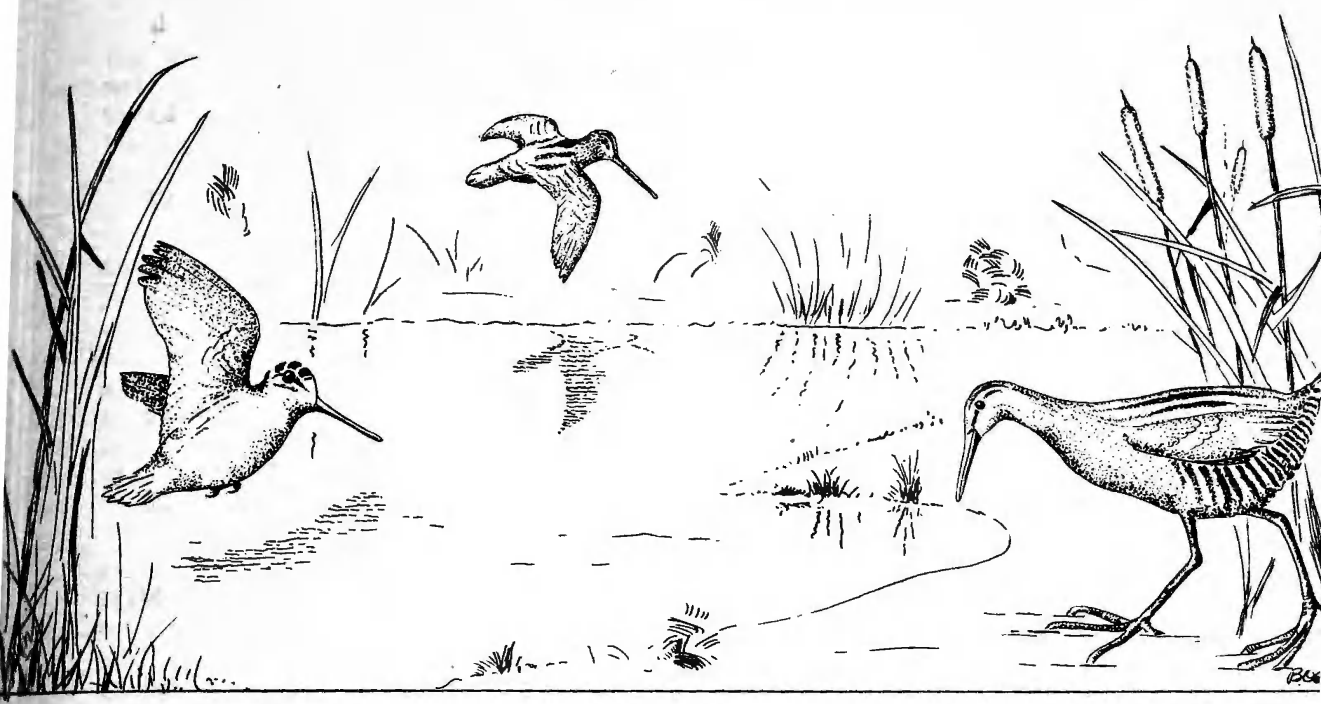
14. Investigations of Woodcock, Snipe and Rails in 1951." John W. Aldrich, January 1952.

15. "Survival Studies of Banded Birds." Joseph J. Hickey, June 1952.

16. "Movements of Waterfowl Broods in Manitoba." Arthur S. Hawkins, May 1952.

17. "Investigations of Methods of Appraising the Abundance of Mourning Doves." Leonard E. Foote and Harold S. Peters, September 1952.

INVESTIGATIONS OF WOODCOCK, SNIPE, AND RAILS IN 1952



Special Scientific Report - Wildlife No.18

United States Department of the Interior ..... Oscar L. Chapman, Secretary
Fish and Wildlife Service ..... Albert M. Day, Director

Canadian Department of Resources and Development .... Hon. R. H. Winters, Minister
Canadian Wildlife Service ..... W. Winston Mair, Chief

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CONTENTS

Page

Introduction by John W. Aldrich 1

Wintering Woodcock Populations in West-Central Louisiana, 1951-1952 by Vincent H. Reid and Phil Goodrum 4

Woodcock Singing Counts--Eastern Canada, 1952 by Victor E. F. Solman 13

Woodcock Census Studies in Northeastern United States - 1952 by Howard L. Mendall 17

Woodcock Singing Ground Counts in Delaware, Maryland, North Carolina, New Jersey, Pennsylvania, West Virginia, and Ohio by P. F. English 21

Woodcock Singing Ground Counts in Central Northern States in 1952 by John W. Aldrich 25

Report on Woodcock Investigations in Massachusetts - Spring 1952 by William G. Sheldon 28

Wilson's Snipe Wintering Ground Studies, 1951-52 by Chandler S. Robbins 30

Wilson's Snipe "Singing" counts in Eastern Canada - 1952 by Victor E. F. Solman 41

Winnowing Counts as a Measure of Wilson's Snipe Breeding Populations by Chandler S. Robbins 44

Wilson's Snipe Breeding Ground Studies in Northern States in 1952 by Chandler S. Robbins 52

Wilson's Snipe Breeding Population Study at Grays Lake, Idaho - 1952 by Thomas D. Burleigh 53

Breeding Populations of Clapper Rail at Chincoteague, Virginia - 1952 by Robert E. Stewart 55

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INTRODUCTION

John W. Aldrich

U. S. Fish and Wildlife Service

Investigations of the American Woodcock and Wilson's Snipe during 1952 have been devoted largely to attempts to improve inventory methods on wintering and breeding grounds. New findings relative to the habits of these birds have given us a better basis for evaluating the data obtained by inventory techniques which have been tried to date.

A Woodcock wintering ground study by Reid and Goodrum in Louisiana indicated a 50 percent decrease in this species from the preceding year. It was thought, however, that this decrease on the study area was due to drought conditions and was compensated for by increases in other areas in other parts of the Gulf Coast region. This theory was substantiated by observations by Leslie L. Glasgow (in lit.) of large increases in woodcock in his study areas near Baton Rouge, La., where with the aid of one other person he was able to band 156 of these birds in one night before 2:00 A.M.

Woodcock singing ground counts were made by cooperators in the same States and Canadian Provinces as previously and were compiled by Victor Solman in Canada, Howard L. Mendall in the Northeastern States, P. F. English in the Central Eastern States, and John W. Aldrich in the Central Northern States. These counts are now distributed so that they sample the most important parts of the woodcock's breeding range. A summary of results is given in Table 1.

Arrangements were made with Edward Kozicky and T. A. Bancroft to have a statistical study made in the Iowa State College statistical laboratory of data obtained by present methods of inventorying woodcock on their breeding grounds. Special attention was paid during the year by investigators to the variables connected with our present methods to facilitate appraisal of their statistical reliability.

Studies of woodcock behavior on their breeding grounds in Massachusetts by William G. Sheldon and his cooperators have disclosed facts most pertinent to inventory work. These studies are mentioned briefly beyond but will be the subject of a much more detailed report by Sheldon at a later date.

Investigations of inventory methods for the Wilson's Snipe were intensified. Chandler S. Robbins of the Fish and Wildlife Service

Table 1.--Comparable Woodcock Singing Ground Counts by Flyways

Atlantic Flyway				Mississippi Flyway			
Routes		1951	1952	Routes		1951	1952
9	New Brunswick	180	201	16	Ontario	79	46
4	Nova Scotia	46	52			79	46
4	Prince Edward I.	41	29				
		267	282	4	Minnesota	20	15
				1	Wisconsin	21	20
10	Maine	132	122	1	Michigan	11	12
1	New Hampshire	12	13			52	47
10	Vermont	89	87				
5	Massachusetts	156	130	2	Ohio	28	34
17	Connecticut	51	63			28	34
		440	415				
2	Delaware	11	18				
3	Maryland	9	10				
7	North Carolina	23	13				
3	New Jersey	20	17				
		63	58				
	Total	770	755		Total . . .	159	127
		2% decrease				20% decrease	

States in Both Flyways			
15	New York	106	109
2	Pennsylvania	9	6
11	West Virginia	53	49
4	Quebec	16	13
	Total . . .	184	177
			4% decrease

Grand Total 1113 1059

4.7% decrease

Total Comparable Routes 131

obtained increased cooperation in an attempt at winter inventory in the southern states. He also analyzed winter abundance data on snipe from Christmas Bird Counts, published in Audubon Field Notes magazine for the past 5 years. Up to the present time these represent practically all of the actual quantitative data available on winter abundance of this species.

Cooperative breeding ground counts of Wilson's Snipe were continued this year in a few Canadian provinces and northern states. Chandler S. Robbins made life history studies of snipe in Ontario which are expected to aid development of methods of making breeding ground inventories of this species. Thomas D. Burleigh continued his snipe breeding ground investigations at Grays Lake, Idaho.

Population studies on the Clapper Rail were made by Robert E. Stewart at Chincoteague, Virginia.

The general conclusions to be drawn from investigations this year are: that neither the Woodcock nor the Wilson's Snipe have changed materially their over-all population status in the last few years; that devising wintering ground inventory methods for both species is beset by the difficulty of sampling a population which winters in different places in different years, depending on moisture conditions; that the timing of breeding ground inventories of Wilson's Snipe must be later than previously supposed to avoid counting migrant birds; that neither the time of day nor the calendar time best for censusing woodcock is suitable for censusing snipe; and that the movement of woodcock from one singing ground to another may be greater than previously supposed and would enter an important variable to be considered in interpreting the inventory data.

WINTERING WOODCOCK POPULATIONS IN WEST-CENTRAL LOUISIANA, 1951-1952

Vincent H. Reid and Phil Goodrum

U. S. Fish and Wildlife Service

Woodcock inventory work was carried on in the longleaf pine belt of west-central Louisiana from November, 1951 through February, 1952. The work was done chiefly in Vernon, Natchitoches and Rapides Parishes (Fig. 1). Two days in January were spent investigating woodcock coverts in and adjacent to the Atchafalaya River bottoms in St. Landry Parish, Louisiana.

Inventory Data

Method.--As in previous years, the woodcock inventory was done in conjunction with bobwhite quail investigations. Bird dogs were used in the work. A record was kept of the number of woodcock points made by the dogs and the time spent afield.

Results.--The 1951-52 woodcock inventory figures are summarized on a weekly basis in Table 1. A record of woodcock points was obtained for 273 hours in the field with dogs; 125 woodcock points were made. The dogs averaged one woodcock point for about every two hours in the field.

Table 2 summarizes the inventory data for the winters 1949-50, 1950-51 and 1951-52. In the winters 1949-50 and 1950-51, the dogs averaged a woodcock point for about every hour spent in the field. In 1951-52 the dogs averaged a point for about every two hours. Thus, the figures show fewer woodcock wintering in the longleaf pine area of west central Louisiana in 1951-52 than wintered in the area in the two previous years.

Even though the figures indicate less woodcock in this region during the winter 1951-52, it is not believed that this necessarily reflects an over-all decreased woodcock population.* Because precipitation was below

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* In Lit. Leslie L. Glasgow says: "I received many reports of a scarcity of woodcock in the pine sections of S. W. Louisiana last winter [1951-1952]. At the time these reports were being received we had heavy concentrations of woodcock in the surrounding parishes. These concentrations were higher than any I have observed in other years. I am convinced that woodcock must vacate large sections of the state where dry conditions prevail and move to areas where moist conditions exist."

LOUISIANA

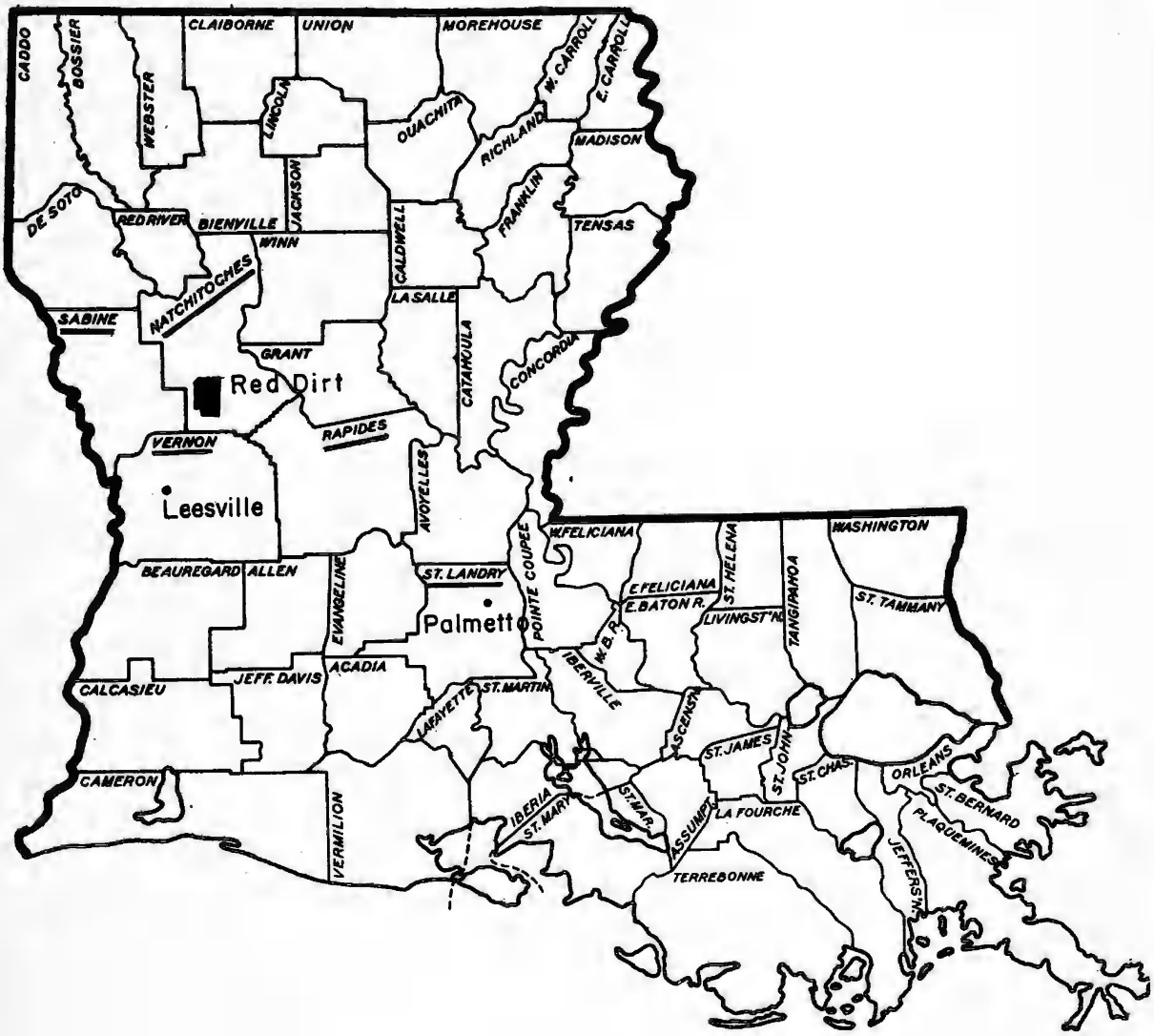

Figure 1

Parishes included in winter woodcock inventory

1951 – 1952

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Table 1.--Woodcock Inventory Winter 1951-1952
West-Central Louisiana

Period	Hours afield	Number woodcock	Hours per woodcock	Woodcock per hour
October 28-November 3, 1951	1½	0	-	-
November 4-10, 1951	7½	1	7.5	.13
November 11-17, 1951	4	0	-	-
November 18-24, 1951	2	1	2	.50
November 25-December 1, 1951	10½	7	1.5	.66
December 2-8, 1951	12½	1	12.5	.08
December 9-15, 1951	14	4	3.5	.28
December 16-22, 1951	22½	4	5.6	.17
December 23-29, 1951	14	3	4.6	.21
December 30, 1951-January 5, 1952	21½	8	2.6	.37
January 6-12, 1952	49	20	2.4	.40
January 13-19, 1952	22½	38	.6	1.6
January 20-26, 1952	18½	6	3.0	.32
January 26-February 2, 1952	21	9	2.3	.42
February 3-9, 1952	36	13	2.7	.36
February 10-16, 1952	16	10	1.6	.62
Totals and averages	273	125	2.1	.45

Table 2.--Summary Woodcock Inventory, Winters 1949-50 to 1951-52
West-central Louisiana

Period	1949-1950		1950-1951		1951-1952	
	Hours afield	Hours per woodcock	Hours afield	Hours per woodcock	Hours afield	Hours per woodcock
Nov. 1st week	-	-	-	-	1.5	-
2nd week	-	-	-	-	7.5	7.5
3rd week	-	-	-	-	4	-
4th week	-	-	9.5	4.7	2	2
5th week	-	-	12	6.0	10.5	1.5
Dec. 1st week	4.5	.8	14	2.6	12.5	12.5
2nd week	9	1.1	18	1.4	14	3.5
3rd week	12	1.3	7	2.3	22.5	5.6
4th week	3	.8	3	-	14	4.6
Jan. 1st week	6.5	.6	1.5	-	21.5	2.6
2nd week	16.5	1.4	18	4.5	49	2.4
3rd week	14	.8	36	.5	22.5	.6
4th week	48	2.5	4.5	1.1	18.5	3.0
5th week	5	1.3	15.5	.6	21	2.3
Feb. 1st week	11	.4	27.5	1.3	36	2.7
2nd week	-	-	-	-	16	1.6
Totals & averages	129.5	1.1	166.5	1.1	273	2.1

normal in the Leesville vicinity the last six months of 1951, there was less favorable woodcock habitat in the area. Many small creeks, branches, bay galls, and seepy hillsides, which "housed" woodcock during the two preceding winters, were dry this season. The soil of many of the post oak flat feeding areas was dry and hard packed. These dry areas contained no woodcock. In the two previous years, under moist conditions, woodcock were present.

The woodcock coverts at Alco, Louisiana were checked on three occasions this winter. No woodcock were found; very scanty woodcock sign was noted. The post oak flats were dry and hard. In the winter 1950-51 a similar single round at Alco netted 14 woodcock points. The "Clubhouse" area at the Red Dirt Game Management Preserve is another example. Three rounds of the area were made with dogs, and no woodcock were found. During the previous winter it was not uncommon to get 10 to 14 woodcock points on a like round. The dry condition of the area was, no doubt, responsible for the poor utilization this year.

The best woodcock count this season was obtained January 17, 1952 in Rapides Parish (T5N R5W) between Temple and Flatwoods, Louisiana. Here, along Cypress Bayou and the adjacent seepy hillsides, 16 woodcock points were made in a four hour round (point per 15 minutes). The Bayou contained water and the hillsides were moist. Woodcock probings were numerous on these moist hillsides. Where conditions were favorable, woodcock were found.

In addition to the less favorable conditions for wintering woodcock in this area, it might be mentioned that the south experienced a mild winter. Woodcock may have lingered in more northern coverts or spread out over a larger area in the south.

In this connection Goodrum observed wintering woodcock as far west as Van Zandt County, Texas. To the east he observed woodcock on the Leaf River Refuge, Greene County, Mississippi and the Eglin Air Force Base, Okaloosa and Walton Counties in West Florida. Aldrich saw one in Refugio County, Texas.

Migration

The first woodcock observed this fall were seen on the Red Dirt Game Management Preserve on November 7, 1951. In 1950, the first woodcock was noted on October 7 on the same area. These observations indicate a later arrival of the birds for the winter 1951-52.

From the field data obtained this winter, the woodcock reached peak numbers in this region the third week in January (Table 2). During this week the dogs averaged a point for every 36 minutes afield. In the 1950-51 season, peak numbers of woodcock were observed in the Leesville area the

third (point per 30 minutes) and fifth (point per 36 minutes) weeks in January. In the winter 1949-50, peak woodcock numbers were observed the first week in January (point per 36 minutes) and the first week in February (point per 24 minutes).

Observations in Central Louisiana

In addition to the woodcock inventory in west-central Louisiana, two days were spent in the field with dogs in central Louisiana (St. Landry Parish). This work was done January 22 and 23, 1952 in and adjacent to the Atchafalaya River bottoms. Thickets, bordering fields known to be utilized by night feeding woodcock, were sampled. Portions of the extensive wooded bottomlands were also checked. The dogs located no woodcock in 9½ hours of work. Examination of several fields and pastures known as woodcock feeding areas revealed very little woodcock sign (probings or droppings). It was the consensus of opinion of the natives encountered during the work that the mild, dry weather caused the birds to forsake these favorite haunts.

In checking these coverts, the same round was made that a Palmetto, Louisiana hunter had made in December. On the December round his dogs located "several" woodcock. Finding no birds on the January 23 round indicates that the birds left this favorite area early this year.

Sex Ratio

Twenty-four woodcock were collected during the winter. Eight of the birds were males and 16 were females.

Weights

The average weight of the 8 males collected was 149.7 grams. The heaviest male weighed 164 grams; the lightest 129 grams. The average weight of the 16 females was 203.3 grams. The heaviest bird weighed 252 grams; the lightest 180 grams.

Summary

1. Woodcock observations were made during 273 hours spent afield with dogs in the longleaf pine area in the vicinity of Leesville, Louisiana; 125 woodcock points were made. The dogs averaged a woodcock point for about every 2 hours in the field.

2. Inventory work in the winters 1949-50 and 1950-51 showed the dogs averaging a point for about every hour afield.

3. It is not believed that the lower inventory figures necessarily reflects a generally lower woodcock population, but rather, it reflects poorer habitat conditions this season in this area. Where habitat conditions were favorable in west-central Louisiana, woodcock were found. A total of 125 were recorded.

4. Woodcock were noted wintering also in Van Zandt and Aransas Counties, Texas, Greene County, Mississippi, and Okaloosa and Walton Counties, Florida.

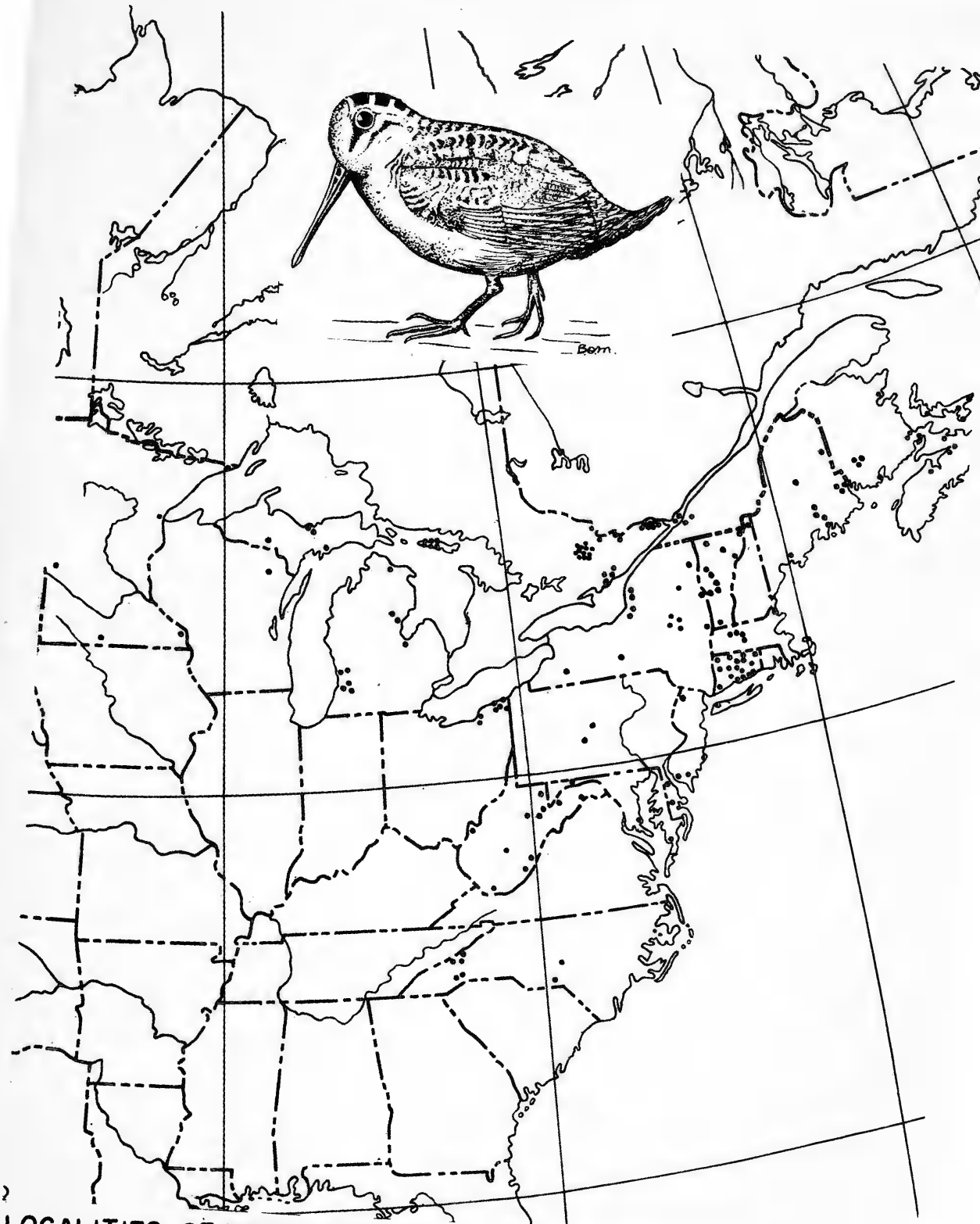
5. The first woodcock was seen on November 7, 1951 on the Red Dirt.

6. The peak number of woodcock in this area occurred the third week of January (point per 36 minutes afield).

7. Nine and a half hours in the field with dogs in recognized woodcock coverts of St. Landry Parish netted no woodcock during the fourth week of January.

8. Twenty-four birds were collected. Eight were males and 16 were females.

9. The average weight of the males was 149.7 grams. The average weight of the females was 203.3 grams.



LOCALITIES OF BREEDING GROUND COUNTS OF WOODCOCK - 1952

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WOODCOCK SINGING COUNTS--EASTERN CANADA, 1952

Victor E. F. Solman

Canadian Wildlife Service

Spring counts of singing male woodcock have been made in selected areas in eastern Canada during the last two weeks of April and the first two weeks of May for several years. During 1952, such counts were made in Ontario, Quebec, New Brunswick, Nova Scotia, and Prince Edward Island.

The counts were made by reliable observers, including officers of the Canadian Wildlife Service, the Wildlife Management Institute, Provincial Game Departments, members of the Royal Canadian Mounted Police, and interested private citizens who cooperated on a voluntary basis.

The relation between the number of singing male woodcock in an area and the breeding woodcock population of the area is not known. In the absence of an easily determined, more reliable index, counts of singing male woodcock, taken annually under comparable conditions are considered to indicate trends in the woodcock populations in the areas concerned.

Ontario

The number of singing male woodcock reported in areas from which comparable data for one or more previous years are available had decreased to 46 from a 1951 total of 79 and a several-year average of 73.0. The marked decrease was reported in all three sampling areas.

Quebec

The four areas established in 1951 were reexamined. Thirteen male birds were reported in comparison to 16 in 1951.

New Brunswick

The number of singing male woodcock recorded on check areas had increased from 180 in 1951 to 201 in 1952. The several-year average for the areas is 186.6.

Nova Scotia

The 1952 total of singing male woodcock was 52 compared to 46 in 1951 and a several-year average of 46.6.

Prince Edward Island

The 1952 total of singing male birds was 29 compared to a 1951 total of 41 and a several-year average of 44.0. Increased human utilization and difficult counting conditions were reported for the Conway area, which showed the greatest decrease from average conditions.

Summary

In Ontario, Quebec, and Prince Edward Island numbers of singing male woodcock reported in 1952 were less than in 1951 for the same areas and also less than the long term averages. In New Brunswick and Nova Scotia the numbers were greater in 1952 than in 1951 and also greater than the long term averages. The total numbers of singing male birds from all areas reported upon were 341 in 1952 and 362 in 1951. The change in reported total numbers of singing male birds from 1951 to 1952 is not considered significant. Data for each census area, by Provinces, are contained in Table 1.

Table 1.--Numbers of Singing Males

Region		Census Area	1951	1952	Av.	No. of yrs.	Observer 1952
		Ontario					
Ottawa		Cumberland	1	0	1.9	10	J.P.Cuerrier
"		Vars	7	3	8.0	10	R.D.Harris
"		Stittsville	10	7	7.2	10	F.H.Schultz
"	x	" #2		3	3	1	V.E.F.Solman
"		Carp	6	2	3.6	7	"
"	x	" #2		2	2	1	"
"		Hawthorne	5	1	3.0	2	"
"	x	Britannia		1	1	1	"
"	x	Old Chelsea		4	4	1	"
Kingston		Cataraqui	0	0	0.5	4	G.M.Stirrett
"		Westbrook	2.5	2	3.9	4	"
"		Perth Rd.	1	1	1.1	4	"
"		Holleford	4.5	5.5	4.1	4	"
Manitoulin Island		East Bluff W.	4	3	2.5	4	H.G.Lumsden, N.D.Patrick
"		Indian Point	9	5	5.2	4	"
"		East Bluff Trail	8	4	6.5	4	"
"		East Bluff Road	8	2	3.7	4	"
"		East Bluff Beaver Meadow Road	4	4	3.8	4	"
"		Gore Bay Hill	3	3	3.0	4	"
"		Kagawong Clearing	6	4	5.0	2	"
Quinte District	xZ	Flinton Rd. (1 mile)		6		1	H.G.Lumsden
"	xZ	Moira River Bridge ($\frac{1}{2}$ mile)		1		1	"
"	xZ	Stoco corner ($\frac{1}{2}$ mile)		0		1	"
"	xZ	Stoco swamp (1 mile)		2		1	"
"	xZ	Farrells Corner marsh (1 mile)		2		1	"
"	xZ	Goose creek marsh (1 mile)		0		1	"
"	xZ	Craigmount ($\frac{1}{2}$ mile)		0		1	H.G.Lumsden, P.A.Thompson
"	xZ	Garden of Eden ($\frac{1}{2}$ mile)		4		1	S.A.Shields, H.G.Lumsden
"	xZ	Robinson Farm ($\frac{1}{2}$ mile)		2		1	H.G.Lumsden
"	xZ	Hungerford Con. 6 Lot 5 (1 mile)		1		1	"
"	xZ	Sulphide road ($2\frac{1}{2}$ mile)		4		1	R.J.Davison, H.G.Lumsden
"	xZ	Crookston road ($1\frac{1}{2}$ mile)		1		1	H.G.Lumsden
"	xZ	Road west of Tweed (2 mile)		2		1	"
"	xZ	Conroy Marsh ($5\frac{1}{2}$ mile)		0		1	"
Totals (2 or more years)			79	46	73.0		

(Continued)

Table 1 Cont'd.--Numbers of Singing Males

Region	Census Area	1951	1952	Av.	No. of yrs.	Observer 1952
		Quebec				
Montreal	Marieville	2	1	1.5	2	L.Lemieux
"	Chambly	1	1	1.0	2	"
"	Mount Royal Cemetery	2	2	2.0	2	"
"	LaSalle Woods	11	9	10.0	2	"
Totals (2 years)		16	13	14.5		
		New Brunswick				
Sackville	Rockeport Rd.	12	12	12.5	4	Mrs.G.F.Boyer
" #	Cookville Rd. 3 (1950)	--	12	7.2	4	S.Little, G.Boyer
St. John	Tilly Rd.	21	38	31.0	5	S.Little, G.F.Boyer, J.Mayer
Moncton	Turtle Creek	27	26	36.0	5	G.F.Boyer, H.O.Whitman, A.Grey
"	Meadow Brook	20	19	14.8	6	"
Tabusintac	Price Settlement Rd.	23	25	14.2	12	H.Webster
Fredericton	Kingsley Br.	15	16	14.0	12	B.S.Wright
"	Charter's Sett.	19	13	13.6	12	"
"	Noonan Area (Richibucto new area)	49	52	50.5	2	"
Totals (not including #) . . .		180	201	186.6		
		Nova Scotia				
Wolfville #3		12	15	13.5	12	R.Tufts
Truro	New Annan Rd.	12	15	11.6	3	H.Webster
"	Camden Rd.	5	6	5	3	"
Wentworth	Wentworth Rd.	17	16	16.5	2	"
		46	52	46.6		
		Prince Edward Island				
	Conway	14	5	13.4	12	A.M.Johnston
	Avondale	9	6	9.2	5	"
	Fortune	14	14	11.6	12	"
	French Village	4	4	8.8	12	"
		41	29	44.4		

x New areas sampled 1952
Z Single count only

WOODCOCK CENSUS STUDIES IN NORTHEASTERN UNITED STATES - 1952

Howard L. Mendall

Maine Cooperative Wildlife Research Unit

During the spring of 1952, the writer served as coordinator of the woodcock census studies that were conducted in the New England States and New York.

Comparative census data are now available for periods varying from 2 years on some of the new areas to as many as 16 years in eastern Maine. Several additional new areas were established this year which will result in comparative data for 1953.

Over-all coverage in the region was not quite as good in 1952 as a year ago. This is due, in part, to several missing reports from cooperators, chiefly in Maine and New York; also, in Maine, several census routes that have been maintained a long period of time were either altered or abandoned this year because of adverse changes in the forest cover.

On several routes throughout the region slight alterations in length were made, and thus figures given in the 1951 report for a given census area are not necessarily identical to the figures for 1951 that are used in the present report.

State organization of the cooperator areas in 1952 was as follows: Maine, by the writer, assisted in Washington County by John Dudley and in central Maine by Richard Parks, Maine Department of Inland Fisheries and Game, and Malcolm Coulter of the Maine Unit; New Hampshire, by Fred Scott; Vermont, by Roger Seamans, Vermont Fish and Game Service, with Ralph Minns, U. S. Fish and Wildlife Service handling the Highgate area and L. Henry Potter taking the Clarendon area; Massachusetts, by William Sheldon, Massachusetts Cooperative Wildlife Research Unit, assisted by Russell Norris, U. S. Fish and Wildlife Service on the Newburyport area; Connecticut, by Mason S. Belden, Connecticut Board of Fisheries and Game; New York, by Charles P. Brown, New York Conservation Commission.

The results of the 1952 census studies by individual areas are given in Table 1.

Table 1.--Woodcock Census Studies in Northeastern States - 1952

State	Census Area	County	No. Singing Grounds 1951	No. Singing Grounds 1952	Observer in 1952
Me.	Calais and vicinity	Washington	59	50	H. Mendall
"	Alexander	"	5	8	J. Dudley
"	Cooper	"	11	9	H. Mendall
"	Houlton	Aroostook	9	5	"
"	Amherst	Hancock	8	12	M. Coulter
"	Lamoine	"	5	6	C. Barrett
"	T4 R10	Piscataquis	11	9	H. Taylor
"	Orono	Penobscot	4	5	H. Quick
"	Alton-Lagrange	"	8	9	M. Coulter
"	Gardiner	Kennebec	12	9	W. Harris
N.H.	Pittsburg	Coos	12	13	F. Scott
Vt.	Highgate	Franklin	8	7	R. Minns
"	Clarendon	Rutland	2	3	H. Potter
"	Wheelerville	"	6	9	H. Colton
"	Shrewsbury	"	12	13	"
"	Sherburne	"	6	6	"
"	Marshfield	Washington	4	4	R. Seamans
"	Victory-Moose River	Essex	18	19	"
"	Waterford	Caledonia	9	8	"
"	Ripton	Addison	15	10	H. Colton
"	Halifax	Windham	9	8	R. Seamans
Mass.	Newburyport	Essex	23	15	R. Norris
"	Leverett	Franklin	14	12	W. Sheldon
"	Shutesbury	"	14	14	"
"	Prescott Peninsula	Worcester	80	61	"
"	Quabbin Reservation	"	25	28	"
Conn.	Canaan	Litchfield	4	5	W. Sondrini
"	Litchfield	"	5	6	R. Billard
"	E. Hartland	Hartford	3	1	A. Lamson
"	Glastonbury I	"	4	1	M. Belden
"	Glastonbury II	"	4	2	"
"	Farmington	"	3	2	R. Billard
"	Branford I	New Haven	2	2	O. Beckley
"	Branford II	"	1	1	"
"	Guilford I	"	2	4	"
"	Guilford II	"	2	4	"
"	Eastford	Windham	4	4	J. Shapiro

(Continued)

Table 1—Continued

	Census Area	County	No. Singing Grounds 1951	No. Singing Grounds 1952	Observer in 1952
Conn.	Shenepsit II	Tolland	2	4	R. Billard
"	Shenepsit III	"	1	2	M. Belden
"	Portland I	Middlesex	3	7	R. Billard
"	Portland II	"	4	10	M. Arnold
"	Norwalk	Fairfield	4	3	R. Billard
"	Montville	New London	3	5	B. Wheeler
N. Y.	New Hudson	Allegheny	4	2	J. Wunder
"	Bethlehem	Albany	10	7	R. Smith
"	Westerlo	"	10	14	R. Carl
"	Guilderland-Knox	"	9	9	"
"	Partridge Run	"	6	4	C. Brown
"	Bucks Corner	Rensselaer	5	5	R. Smith
"	Watertown-Adams	Jefferson	6	4	F. Morrell
"	Rodman	"	3	4	S. Northrup
"	Dryden	Tomkins	5	4	J. Whalen
"	Indian Lake	Hamilton	12	9	C. Brown
"	Lysander	Onondaga	9	10	W. Dence
"	Wilmington	Essex	14	20	G. Chase
"	Redfield	Oswego	4	6	C. Brown
"	Fort Salonga	Suffolk	5	6	J. Skinner
"	New Britain	Columbia	4	5	R. Darrow

Summary

The following tabulation shows the totals by states for all census areas:

State	1951	1952	Percent of change in 1952
Maine	132	122	8% decrease
New Hampshire	12	13	8% increase
Vermont	89	87	2% decrease
Massachusetts	156	130	17% decrease
Connecticut	51	63	24% increase
New York	106	109	3% increase
Totals	546	524	4% decrease

From the data it may be concluded that the status of breeding woodcock in the region as a whole was not materially changed from 1951, although this was primarily due to a substantial increase in Connecticut. The situation elsewhere was much less favorable. Maine and Massachusetts both registered moderate decreases, while Vermont and New York showed little appreciable change as measured by the censuses. In New Hampshire a moderate increase was apparent but this is based on only a very small sample.

In Maine, the 8 percent decrease follows an even heavier decrease of a year ago. It was most noticeable in the extensive breeding areas of the eastern part of the State. Decreases have occurred in Maine in 3 of the last 4 years. Heaviest decreases in Massachusetts took place on the Prescott Peninsula and Newburyport areas. This year's decrease in Massachusetts follows 3 consecutive years of increased populations. Connecticut's gains were rather general over much of the State but were most striking in Middlesex County; by contrast all of the Hartford County areas had lower populations in 1952.

WOODCOCK SINGING GROUND COUNTS IN DELAWARE, MARYLAND, NORTH CAROLINA, NEW JERSEY, PENNSYLVANIA, WEST VIRGINIA, AND OHIO, 1952

P. F. English

Pennsylvania Cooperative Wildlife Research Unit

The following agencies and their aides participated in the reports here presented for the years 1949, 1950, 1951, and 1952.

Board of Game and Fish Commissioners, Dover, Delaware.
Game and Inland Fish Commission, Baltimore 2, Maryland.
Wildlife Resources Commission, Raleigh, North Carolina.
Department of Conservation and Economic Development, Trenton 7, New Jersey.
Pennsylvania Cooperative Wildlife Research Unit, State College, Pennsylvania, and The Pennsylvania State College.
Conservation Commission, Charleston, West Virginia.

As you know we have endeavored to have each line established run year after year. Most cooperators are following this pattern. This year I am able to compare 31 stations in 1952 with a similar number of 1951 and in totaling these it is interesting to find how the total observations for each year are almost identical.

There are 9 stations where we have three years to compare and six stations where we have four years data. As this progresses we should gain some valuable information over the whole area.

Four new stations marked with * were established in 1952.

The findings over the year are reported to the best of my ability in interpreting the data in Table 1 while Table 2 compares the last two years by States; Table 3 summarizes data for central Pennsylvania from 1939 through 1952.

Table 1.--Woodcock Singing Ground Counts in Central Eastern States for 1949, 1950, 1951 and 1952

State	Census Area	County	No. Occupied Singing Grounds '49	'50	'51	'52	Observer in 1952
Del.	Petersburg	Kent		9	6	5	Caulk & Chamberlain
"	Gotts Road	New Castle		7	5	13	H. P. Cofer
Md.	Pocomoke River	Worcester			3	7	G. A. Jones
"	Drum Point	Calvert			1	2	J. R. Longwell
"	15 mile Creek Road	Allegheny		3	5	1	H. L. Roberts
N.C.	New Hope Farm	Chatham			4	3	D. J. Hankla
"	Highway 70 Glen Alpine	Burke			2	1	E. R. Smith
"	Glen Alpine to Power Plant	"			4	1	"
"	Hoffman-Jackson Springs	Richmond*				1	D. L. Taylor
"	1 mi. E. Morganton	Burke			4	2	E. R. Smith
"	Old North Main Street	Henderson			5	3	Rex L. Bird
"	Tracy Grove Road	"			4	3	"
N.J.	Archer Corner Colliers Mills	Ocean*				2	P. D. McLain
"	Tuckahoe Area	Atlantic	3	3	7	8	Schmidt & Ferringo
"	Walpack-Bevans	Sussex			6	4	R. A. Spinks
"	Haileyville Shooting Grds.	Cumberland		7	7	5	E. G. Bevan
Pa.	Barrens	Centre	16	16	3	2	W.M.Sharp, E. M. & P.F.English
"	Stone Valley	Huntingdon	15	15	6	4	"
W.Va.	Rt. 47 to Md. Border	Preston		1	0	2	W. Santonas
"	Kumbrabow Forest	Randolph	9	9	10	9	H. Uhlig
"	Leading Creek	"	5	4	2	1	K. Chiavetta
"	Bayard Henry	Grant		10	13	13	Gilpin-Kletzly
"	Clawson	Pocahontas		10	4	3	W. Bailey
"	Phillips Run	Nicholas		4	1	3	S. Hanna
"	Mt. Tabor Road	Raleigh		1	6	3	T. R. Samsell
"	Rt. 45/5 South	Hampshire			6	6	R. G. Wingard
"	Co. Rt. 25 to U.S.60	Greenbrier			1	3	Willard
"	Old Torn Co. Road to Igloo	Mason			6	2	H. & A. Dahl
"	State Route #32	Tucker	4	6	4	4	W. R. DeGarmo

(Continued)

Table 1--Continued

State	Census Area	County	No. Occupied Singing Grounds '49	'50	'51	'52	Observer in 1952
Ohio	Rt. #1-Austinburg	Ashtabula			7	7	M. C. Gilfillan
"	Rt. #2-Dorset	"			6	6	"
"	Rt. #3-Morgan	"			5	6	"
"	Rt. #4-Andover	"			10	15	"
"	Rt. #5-Ashtabula	" *				25	Harry Andrews, M. D. & M. C. Gilfillan
"	Rt. #6-Franklin	Portage *				4	R. W. Dexter
"	Rt. #7-Mentor	Lake *				9	G. & G. Ives
	Comparable totals 1951-1952				183	147	

Table 2.--A comparison of Woodcock singing ground counts for 1951-1952 in States where permanent routes are set up

State	1951	1952	Change
Delaware	11	18	+ 7
Maryland	9	10	+ 1
** North Carolina	23	13	-10 **
New Jersey	20	17	-3
Pennsylvania	9	6	-3
West Virginia	53	49	-4
Ohio	28	34	+ 6
	153	147	6.0 decrease

** Coverage of 1952 did not include all areas covered in 1951, if complete coverage had been made, the drop might not have been so drastic.

Table 3.--Central Pennsylvania Woodcock Spring Census of Singing Males, 1939-1952

Year	Huntington County		Centre County		Clearfield County
	Stone Valley	Globe Run *	Bald Eagle Valley *	Barrens	Phillipsburg Flats *
1939				45	
1940	12			27	
1941	12			20	
1942	13			10	
1943	12			No count	
1944	12			10	
1945	12		Common but	13	
1946	12		no count	9	11
1947	14	11	70	30	19
1948	15		30**	15	
1949	15			16	
1950	16			16	
1951	6			3	
1952	4			2	

* Discontinued not enough time or personnel.
** Only 8 miles were censused.

Description of Areas

Stone Valley - About 1 mile long along small creek; alder bottom; mixed stand of oaks and pines on hillsides.

Globe Run - About one half mile long; alder bottom.

Bald Eagle Valley - Approximately 16 miles long; along creek; alder bottoms; some aspen clumps in bottom; crabapples; hawthorns and oak-maple-hickory hillsides; farmland adjacent in bottom.

Barrens - State Game Lands #176; about 4 miles; scrub oak and aspen clumps.

Phillipsburg Flats - About 2½ miles along small creek; aspen and alder.

WOODCOCK SINGING GROUND COUNTS IN CENTRAL NORTHERN STATES IN 1952

John W. Aldrich

U. S. Fish and Wildlife Service

For the second year singing ground counts of woodcock were made by cooperators in the central northern states of Minnesota, Wisconsin and Michigan. The results for both years are shown in tabular form in terms of singing grounds per 10 miles of route. The figure used as an index of the number of singing grounds for each group was the highest number recorded of two or more counts during the month of May. April counts are now disregarded because of demonstrated fluctuations due to movements of birds during that month. A minimum of two counts was considered necessary to give a satisfactory sample of the birds present. The number of singing grounds (Table 1) was converted to the number per unit length of route so that routes of different lengths could be compared with one another.

It will be noted that in the table two methods were used in comparing results of 1951 with 1952: (1) counts made only on routes which were covered in both years and (2) average number of birds per 10 miles of route heard on all trips each year. It is believed that a comparison of counts made over the same route in different years is more reliable than average numbers for all routes, many of which are in different locations in the two years. For this reason it was a little disappointing that in only six instances out of a total of 19 counts made this year, were they over the same routes as last year. It will be noted also that these 6 comparable counts showed a 13 percent decrease in woodcock singing grounds whereas the average figures based on all counts showed a 21 percent decrease. It is not known at the present time whether either of these figures is significant because no thorough check has been made of the statistical reliability of these data. We are, however, making an effort to have similar data, collected over many years in other parts of the country, analyzed by statisticians. Next year it is hoped that we will be in a much better position to plan our woodcock singing ground investigations so that the data obtained will be of known statistical reliability.

We wish to express thanks to the Minnesota, Michigan and Wisconsin Departments of Conservation for their cooperation in this work. Particularly we are appreciative of the cooperation of the following persons who actually participated in the census work: Robert I. Benson, J. K. Bronoel, W. D. Burnett, Arnold B. Erickson, Otto Failing, Robert E. Farnes, Vernon E. Gunvalson, Gladys A. Hall, Orland L. Haugen, P. B. Hofslund, Frank D. Irving, Wm. H. Langley, Don Ledin, Norman J. Ordal, Walter L. Palmer, Tony Peterle, Robert R. Rafferty, M. H. Stenlund, Ivan Thomson, R. C. Van Etten, and John L. Zorichak. It is hoped that they will be in a position to carry on these valuable studies next spring.

Table 1.--Woodcock Singing Ground Counts in Central Northern States
(The highest of 2 or more counts in May)

State	County	Locality	Singing grounds per 10 miles 1951	Singing grounds per 10 miles 1952
Minn.	Murray	Shetek State Park	5	
"	Wabasha	Weaver	1	
"	"	Hwy. 74 S. of Weaver	3	5*
"	Cook	Bally Creek Road to S8 T61N R1W	17	17*
"	Pope	Gilchrist Woods Rd. (same as Glenwood, Rt. 2)	0	
"	"	Brainerd Woods Road (same as Glenwood, Rt. 1, in 1951)	0	0*
"	St. Louis	Duluth	29	14*
"	Martin	Ceylon Rd., Bright L.		2
Mich.	Alger	Wright's Camp	41	
"	"	Stutts Cr. - Anderson, 0.7 mi. W. Rt. M-94		15
"	"	Indian Town Rd. to Rt. M-94		15
"	Schoolcraft	S. of Stutts Creek	55	
"	"	SE of Anderson Creek	47	
"	"	Rt. M-94 to 4 mi. S. Shingleton		23
"	Dickinson	T43N R29W	30	
"	Iron	Crystal Falls	35	
"	"	Backwater Rd. Twp. T43N, R32W		33
"	Clinton and Shiawassee	R. 1, Laingsburg	10	
"	Kalamazoo	Alamo	27	28*
"	"	R. Ave. Portage Twp.		28
"	Van Buren	Almena	39	
"	"	Fish L. Rd., Almena Twp.		48
"	Houghton	Sidnaw	23	
"	Allegan	Round Lake and M-89	15	
"	"	M-89 Gable's Corners	25	
"	"	2 mi. SE of New Richmond	19	
"	"	Ely L. Rd., Allegan Twp.		6
"	"	Blue Area Rd., Allegan Twp.		9

(Continued)

Table 1--Continued

State	County	Locality	Singing grounds per 10 miles 1951	Singing grounds per 10 miles 1952
Mich.	Cheboygan	Tin Bridge Rd., S. side Sec. 28 to NE corner of Sec. 27		35
"	Saginaw	U.S.F.S. Truck Trail Sec. 34, T47N, R36W		18
"	Roscommon	South Loxley Rd., Twp. 22N R4W		11
"	"	Homestead Rd., Twp. 23N, R4W		10
Wis.	Langlade	Hwy. 64 near Ackley	55	50*
* Comparable totals			131	114 (13% decrease)
Averages based on all records			24	19 (21% decrease)
Averages based on all records by States: Minn. (7 in 1951; 5 in 1952) .			8	8 (same)
Wis. (1 in 1951; 1 in 1952) .			55	50 (9% decrease)
Mich. (12 in 1951; 13 in 1952)			31	21 (32% decrease)

REPORT ON WOODCOCK INVESTIGATIONS IN MASSACHUSETTS - SPRING 1952

William G. Sheldon

Massachusetts Cooperative Wildlife Research Unit

Since a paper on the progress of Massachusetts woodcock studies will be presented at the 18th North American Wildlife Conference in March, only a summary of the past spring's work is presented here.

The methods of study followed were much the same as in 1950 and 1951. A few new capture techniques were experimented with. The combination of a Unit trap, decoy and portable phonograph with a recording of a male's courtship performance gave promise as the most practical and effective method for capturing adult males. On an experimental basis, one man lured in three singing males in adjoining singing grounds during one evening. The recording device was transported on foot between singing grounds and can be easily carried by one man and set up in a few seconds.

In addition to the trapping and banding, two concurrent special studies were conducted by graduate students. One census line was inventoried on 28 occasions. The performance of one individual male was recorded in detail during 45 evenings. These studies and the trapping were focused on census methods in an endeavor to evaluate current techniques and to suggest possible improvements.

The number of birds captured, the percentage of returns, the promiscuous behavior of male birds, and additional evidence of the shifting of singing grounds, all virtually duplicated the results of 1951. Results were consistent enough to suggest much of the behavior observed in former years is normal.

It is suspected that the incubation period and the height of the hatch have some bearing on the performance of male birds.

Few of the trapped birds are believed to be migrants. Most old birds reach their breeding grounds in the first wave of migrants arriving on the trapping grounds.

Irregularity of most phases of the males' courtship performance appears normal, although the actual time of the entire performance is fairly regular.

Variations in weather did not appear to noticeably affect courtship activities unless there were extreme conditions -- especially low temperatures.

Based on the foregoing studies and the accumulated information of three springs of intensive trapping and banding, nine specific recommendations have been made for refining census methods. These include a standard number of runs, a standard time length for duration of a run, a 1/2 mile interval between stops, a standard stopping time for each station, when to start the count, and what part of the courtship performance is to be recorded as one bird.

Very strong circumstantial evidence that a female woodcock occasionally "peents" was recorded by one observer.

Miscellaneous notes on predation, nesting and cover usage were collected.

Assistants and cooperators in the Massachusetts study included R. Wood, E. Howard, Gardiner Hobart, Gordon Hobart, James Taylor, J. McDonough, T. H. Ripley, W. A. Fitzpatrick, A. Pelletier, Sargent Russell, W. Gunn, R. Norris, L. M. Bartlett, W. Nutting and Leslie Campbell.

WILSON'S SNIPE WINTERING GROUND STUDIES, 1951-52

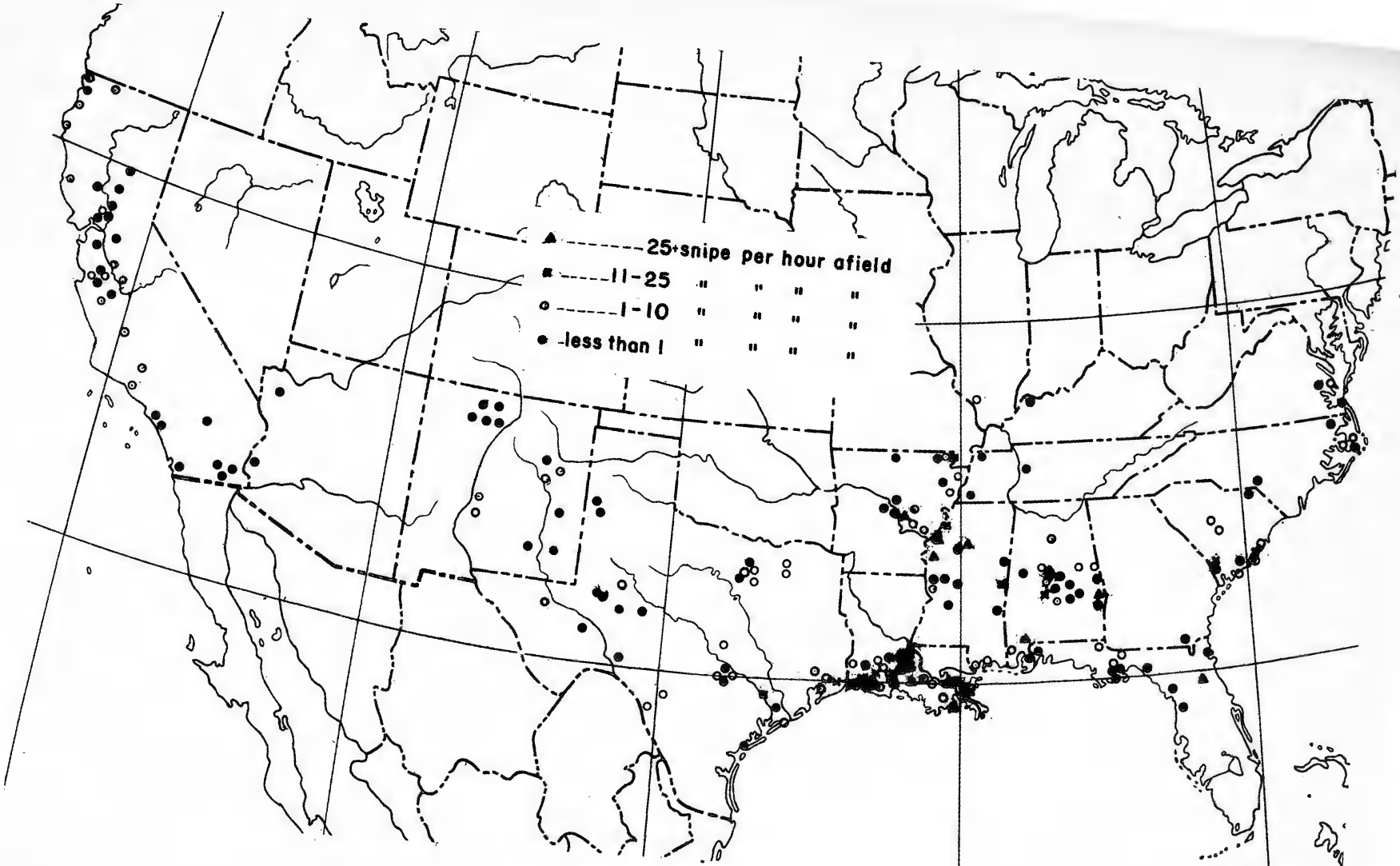
Chandler S. Robbins

U. S. Fish and Wildlife Service

Investigations for the winter of 1951-52 consisted of: (1) Organizing a series of winter snipe counts throughout the southern states for the purpose of obtaining an index of abundance; (2) Participating in and summarizing the results of these counts; (3) Rechecking the sample areas which had been visited in the previous winter; (4) Investigating methods of trapping snipe for banding; and (5) Summarizing snipe abundance as recorded on the Christmas Bird Counts in Audubon Field Notes.

Wilson's Snipe Abundance Index.--The cooperation of State game departments, professional and amateur ornithologists and Fish and Wildlife Service employees was enlisted in this first widespread attempt to obtain an index of abundance of the Wilson's Snipe on its wintering grounds in the southern United States. All cooperating agencies and individuals were asked to spend one or more 8-hour days afield during the period January 26-30, and to cover an area of their own selection, recording the number of snipe observed, the location and habitat of each observation, and appropriate details of time and mileage covered on foot, by boat or by car. It was requested that routes be laid out in such a way as to include not only those areas where snipe were known to be wintering at the present time, but also a number of areas which although unsuitable for snipe at present might be attractive to this species in a subsequent year when water levels are either higher or lower; this procedure can be expected to provide a more reliable index to future trends in the population.

The response was most gratifying. One hundred and ninety reports were submitted, distributed as follows: Texas, 33; California, 32; Louisiana, 23; Alabama, 22; Mississippi, 15; Arkansas, 14; New Mexico, 13; Florida, 12; South Carolina, 10; North Carolina, 5; Tennessee, 3; Virginia, 3; Arizona, 2; Georgia, 1; Illinois, 1; and Kentucky, 1.
Grateful appreciation is expressed to the personnel of the state game departments of Texas, California, Louisiana, Alabama, Mississippi, New Mexico and Florida; to the game management agents, refuge managers, and biologists of the Fish and Wildlife Service; and to the dozens of other individuals who contributed to the success of this project. I wish especially to thank Major James Brown, Director of the Fish and Game Division of the Louisiana Department of Wild Life and Fisheries; Dr. Lyle St. Amant and Mr. John Campbell of the Federal Aid Project at Louisiana State University; Mr. A. B. Blakemore of New Orleans; and Messrs. V. L. Childs and R. R. Rudolph of Sabine Migratory Waterfowl Refuge, Sulphur, La., whose generous cooperation and assistance greatly facilitated my own field investigations during the past two winters.



Map 1
MID-WINTER SNIPE COUNT
Jan. 26-30, 1952

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Summary of Winter Snipe Counts, January 26-30, 1952.--The results of the first Wilson's Snipe Abundance Index are summarized briefly in Table 1 and Map 1. For purposes of this table, coverage has been expressed in terms of total hours afield. More detailed data are available, as most observations were recorded in terms of number of hours and miles spent in specific habitats; until we have observations from this coming winter for comparison, however, a more detailed analysis of the 1952 information is not called for. It is hoped that most of the January 1952 localities can be covered in the same manner in subsequent years and that new areas can be set up in strategic localities.

Results of Rechecking 1951 Sample Areas.--Most of the areas listed on page 48 of Special Scientific Report - Wildlife No. 14 were rechecked in a similar manner in late January or early February 1952 in order to ascertain the amount of change in the habitats and the changes in snipe population. As had been feared, a large proportion of these small areas had undergone marked changes in water level and these changes had greatly altered the local snipe population. The area in St. Bernard Parish, for instance, had been drained during the year; areas in Terrebonne and Iberville Parishes had dried up due to drought; the Galveston area was completely covered with water as result of an 8.56-inch downpour. An area which was intensively studied both years on the Sabine Migratory Waterfowl Refuge in the brackish marshes south of Sulphur, La., showed no measurable change in snipe population. The other area which had been checked several times both years, the Mobile Bay Causeway, Ala., registered a slight increase in 1952.

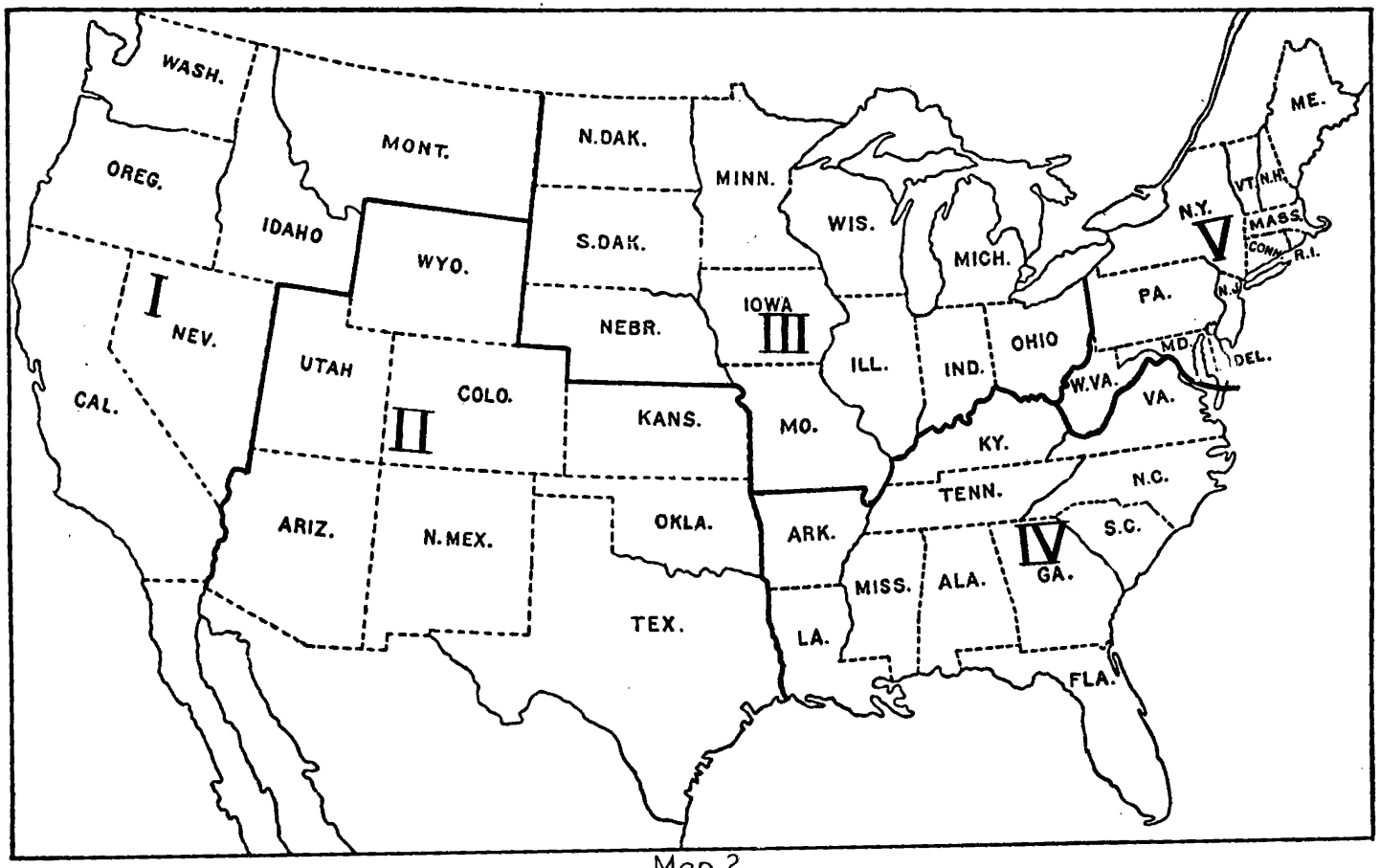
Observers who participated in the January 1952 snipe counts were asked to comment upon significant increases or decreases in their wintering populations if they had previous records for comparison. Of the twenty-three persons who felt they had comparative information, 12 indicated increases (average rise of 26 percent), 6 indicated decreases (average drop of 73 percent), and 5 reported no change. While these samples are small, they suggest that there was no appreciable over-all change in the numbers of snipe wintering in the southern states from 1951 to 1952.

Table 1.--Summary of Winter Snipe Count, January 26-30, 1952

State	No. of Counts	Total Snipe	Snipe per Count	Total Hours	Snipe per Hour
California	32	330	10.0	214	1.5
Arizona	2	3	1.5	5¼	0.6
New Mexico	13	26	2.0	68-3/4	0.4
Texas	33	481	14.5	139¼	3.5
Arkansas	13 (+1)*	358 (+12)	27.5	82½	4.3
Louisiana	22 (+1)*	4,445 (+500)	202.0	143-3/4	30.9
Mississippi	15	2,654	176.9	101	26.2
Alabama	20 (+2)*	993 (+28)	49.7	89¼	11.1
Florida	12	278	23.2	45-3/4	6.1
Georgia	1	4	4	8	0.5
Tennessee	3	0	0	59	0
Illinois	1	22	22	7-3/4	2.8
Kentucky	1	0	0	9½	0
South Carolina	10	303	30.3	47	6.5
North Carolina	4 (+1)*	35 (+2)	8.8	36½	1.0
Virginia	3	15	5.0	12½	1.2
	185 (+5)	9,947 (+542)	53.8	1,069-3/4	9.3

* Number of hours afield not stated; these counts are not included in computations of "Snipe per Count" or "Snipe per Hour."

Data from Christmas Season Counts.--An analysis of the number of snipe recorded on the annual Christmas Bird Counts during the past five years (based on annual coverage of between 3,279 and 4,372 party-hours of field work in snipe-reporting areas, Table 2) indicates no significant change from the winter of 1950-51 to the winter of 1951-52. The number of snipe recorded per 100 party-hours afield is presented for each of the five Fish and Wildlife Service administrative regions (Map 2) during the last five winters to give some indication of wintering abundance in the various regions. The data for Regions 1, 2 and 3 are quite variable due to the relatively small number of areas included. The total number of snipe recorded per 100 party-hours for each of the previous years differs from the figures presented last year for two reasons: (1) the previous tabulation was based only on counts from the central and southern states, whereas the present figures include all areas which have been covered all five years and have reported snipe one or more of these years; and (2) some areas which had been covered all four of the previous years (notably Harlingen, Tex., which has several times recorded more of this species than any other area) were not covered the fifth year and so had to be dropped from the series. In spite of the addition of several new areas and the necessary elimination of a few old ones, the year-to-year trend is unaltered.



Map 2

ADMINISTRATIVE REGIONS

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Table 2.--Data from Christmas Counts

Region	(States)	No. of Areas	Snipe per 100 party hours				
			1947-48	1948-49	1949-50	1950-51	1951-52
I	(Oreg., Mont. Calif.)	9	34	17	7	11	20
II	(Utah, Ariz., Okla., Texas)	11	25	11	23	25	34
III	(Ohio, Ind., Ill., Wis., Minn., Iowa, Missouri)	12	2	3	4	5	5
IV	(Ky., Tenn., La., Miss., Ala., Va., N.C., S.C., Ga., Florida)	35	12	15	15	21	16
V	(Mass., R.I., L.I., Pa., N.J., Del., Md., D.C., W.Va.)	18	3	3	8	5	3
	Total U. S.	85	15.0	10.7	11.8	14.0	13.9

Peak in 1949-50 and 1950-51 in east with slight decrease in 1951-52.

In west depression in 1948-49 and 1949-50 with recovery since.

Summary.--Investigations during the winter of 1951-52 indicate no appreciable change in numbers from the previous winter.

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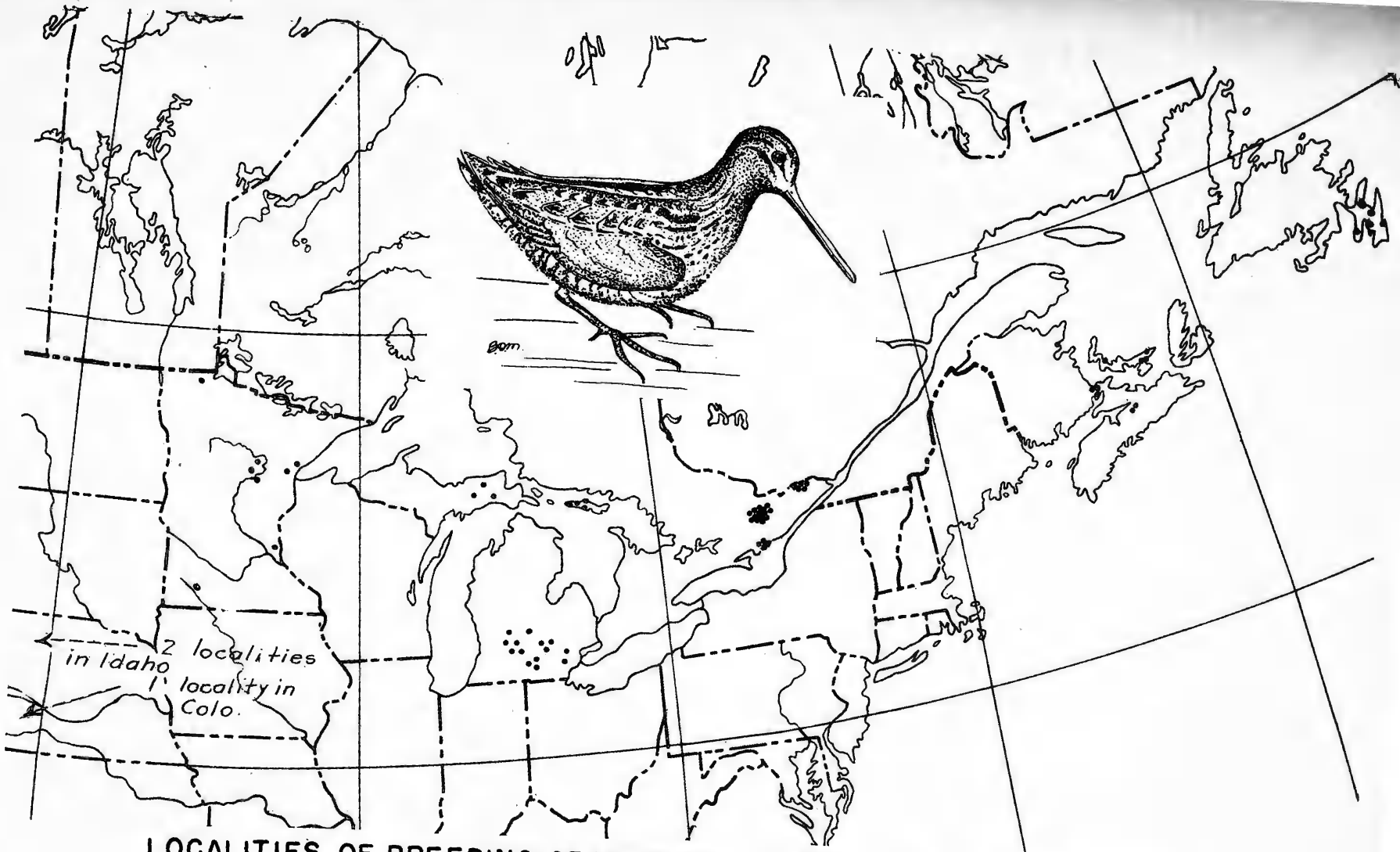

LOCALITIES OF BREEDING GROUND COUNTS OF WILSON'S SNIPE - 1952

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WILSON'S SNIPE "SINGING" COUNTS IN EASTERN CANADA - 1952

Victor E. F. Solman

Canadian Wildlife Service

Spring counts of singing male Wilson's snipe have been made in eastern Canada for several years in connection with somewhat similar counts of woodcock. Individual snipe range over a wider area than do woodcock and do not appear to have a fixed winging time or area to the same extent as woodcock. For these reasons reliable counts are difficult to secure. As in the case of woodcock, the relation between the number of singing male birds and the breeding population is not known.

Ontario

The number of singing male birds recorded in 1952 was 26 compared to 47.5 in the same areas in 1951 and a several-year average of 41.9. Several observers reported that singing male snipe were much more widely distributed than in former years though less numerous on the study areas.

New Brunswick

The limited data available suggest little change in the snipe population from 1951.

Nova Scotia

As in New Brunswick, limited data available suggest little change in the snipe population compared to 1951.

Prince Edward Island

The limited data available indicate a large increase in numbers of singing male snipe compared to 1951. The reported increase is about threefold.

Newfoundland

No comparative data are available from previous years, but the initial data secured from five sample areas indicate a substantial number of singing male snipe present in the areas selected for study.

Summary

Numbers of singing male Wilson's snipe in areas for which comparable data are available were 85 in 1952 compared to a several-year average of 68.5 and a 1951 total of 66.5, as presented in Table 1.

Table 1.--Numbers of Singing Males

Region		Census Area	1951	1952	Av.	No. of yrs.	Observer 1952
		Ontario					
Ottawa		Cumberland	0	0	0.8	4	J.P.Cuerrier
"		Vars	7	4	4.7	4	R.D.Harris
"		Stittsville	5	6	4.4	4	F.H.Schultz
"		Carp	3	1	2.3	4	V.E.F.Solman
"		Hawthorne	15	9	12.0	2	"
"	x	Britannia		4	4.0	1	J.S.Tener
Kingston		Cataraqui	0	0	5.6	4	G.M.Stirrett
"		Westbrook	4	0	1.9	4	"
"		Perth Rd.	4	0	3.0	4	"
"		Holleford	9.5	6	7.2	4	"
Manitoulin Island	x	Kagawong Clearing		1		1	N.D.Patrick H.G.Lumsden
	x	Indian Point		1		1	"
	x	Beaver Meadow Rd.		2		1	"
	x	Gore Bay Hill		2		1	"
Quinte District	xZ	Flinton Rd. (1 mile)		0		1	H.G.Lumsden
	xZ	Moira River Bridge (½ mile)		0		1	"
	xZ	Stoco corner (½ mile)		2		1	"
	xZ	Stoco swamp (1 mile)		3		1	"
	xZ	Farrells corner marsh (1 mile)		3		1	"
	xZ	Goose creek marsh (1 mile)		1		1	"
	xZ	Craigmount (½ mile)		3		1	H.G.Lumsden P.A.Thompson
	xZ	Garden of Eden (½ mile)		0		1	S.A.Shields H.G.Lumsden
	xZ	Robinson Farm (½ mile)		0		1	H.G.Lumsden
	xZ	Hungerford Con. 6 Lot 5 (1 mile)		0		1	"
	xZ	Sulphide road (2½ mile)		4		1	R.J.Davison H.G.Lumsden
	xZ	Crookston road (1½ mile)		2		1	H.G.Lumsden
	xZ	Road west of Tweed (2½ mile)		0		1	"
	xZ	Conroy Marsh (5½ mile)		14		1	"
Total (not including x)			47.5	26	41.9		

(Continued)

Table 1 Cont'd.-- Numbers of Singing Males

Region	Census Area	1951	1952	Av.	No. of yrs.	Observer 1952
			New Brunswick			
Moncton	Turtle Creek	0	0	0.4	5	H.R.Webster G.F.Boyer
Tabusintac	Price Sett. Rd.	1	2	1.2	5	H.R.Webster
Sackville	Aulac - Jolicoeur # 13 (1950)		9	9.9	4	G.F.Boyer
"	Cookville Rd. # 11 (1950)	—	11	9.2	4	"
Total (not including #)		1	2	1.6		
			Nova Scotia			
Truro	New Annan Rd.	4	2	2.6	3	H.R.Webster
"	Camden Rd.	3	6	3.6	3	"
Total		7	8	6.2		
			Prince Edward Island			
	Conway	6	20	8.8	5	A.M.Johnston
	Avondale	5	29	10.0	5	"
	Fortune #11(1950)		22	14.3	4	"
	French Village #10(1950)		27	12.2	4	"
Total (not including #) . . .		11	49	18.8		
			Newfoundland			
x	Ship Cove		9		1	L.M.Tuck
x	Bay Bulls		30		1	"
x	Holyrood		32		1	"
x	Salmonier		33		1	"
x	Blaketown		34		1	"

x New Transects 1952.
Z Single counts only.

WINNOWING COUNTS AS A MEASURE OF WILSON'S SNIPE BREEDING POPULATIONS

Chandler S. Robbins

U. S. Fish and Wildlife Service

Since no adequate technique had been perfected for the censusing of Wilson's Snipe on their breeding grounds, the writer was assigned to make a study of their winnowing activity as an indicator of abundance during the breeding season. The area selected for the investigation was Manitoulin Island, located between Lake Huron and Georgian Bay, Ontario. Investigations were carried out in this area from June 1 to 23, 1952. Mr. Harry Lumsden and other biologists of the Ontario Department of Lands and Forests had already conducted studies of woodcock and grouse on this island, and supplied valuable information on the distribution and abundance of snipe during the spring migration period. I wish to thank Dr. C. H. D. Clarke, Supervisor, Wildlife Management, Department of Lands and Forests, Toronto, and Dr. V. E. F. Solman, Chief Biologist, Canadian Wildlife Service, for helpful suggestions and for many courtesies extended to me prior to and during the investigations.

Area Studied

The most extensive observations were made in an irregular-shaped marsh of about fifteen acres, located one-half mile east of the Barrie Island bridge, or about one mile northwest of the Gore Bay airfield in Gordon Township. Three pairs of snipe were recorded regularly in this marsh throughout the period of the study. Although there is danger of obtaining atypical results when working with such a small sample, information gathered from other areas on Manitoulin Island did not vary appreciably in any respect from data obtained at the Barrie Island bridge.

The advantages of the particular area chosen for study were the relatively small size of the marsh, and its accessibility by road. Except during periods of high wind, all three winnowing males could easily be heard all the time they were performing, and there was no danger of interference by other males, as there were no other nesting areas within two miles. It was frequently possible to distinguish the three males by the area each covered, the number of "winnows" per minute, the length of each winnowing call, a peculiar quality of the winnowing sound of one individual, or the position of the answering female (whose customary ground position in the evening and early morning was usually not under the area covered by the performing male).

Time of Day

Snipe were heard winnowing over their nesting grounds at all hours of the day and night, but a definite peak of activity occurred

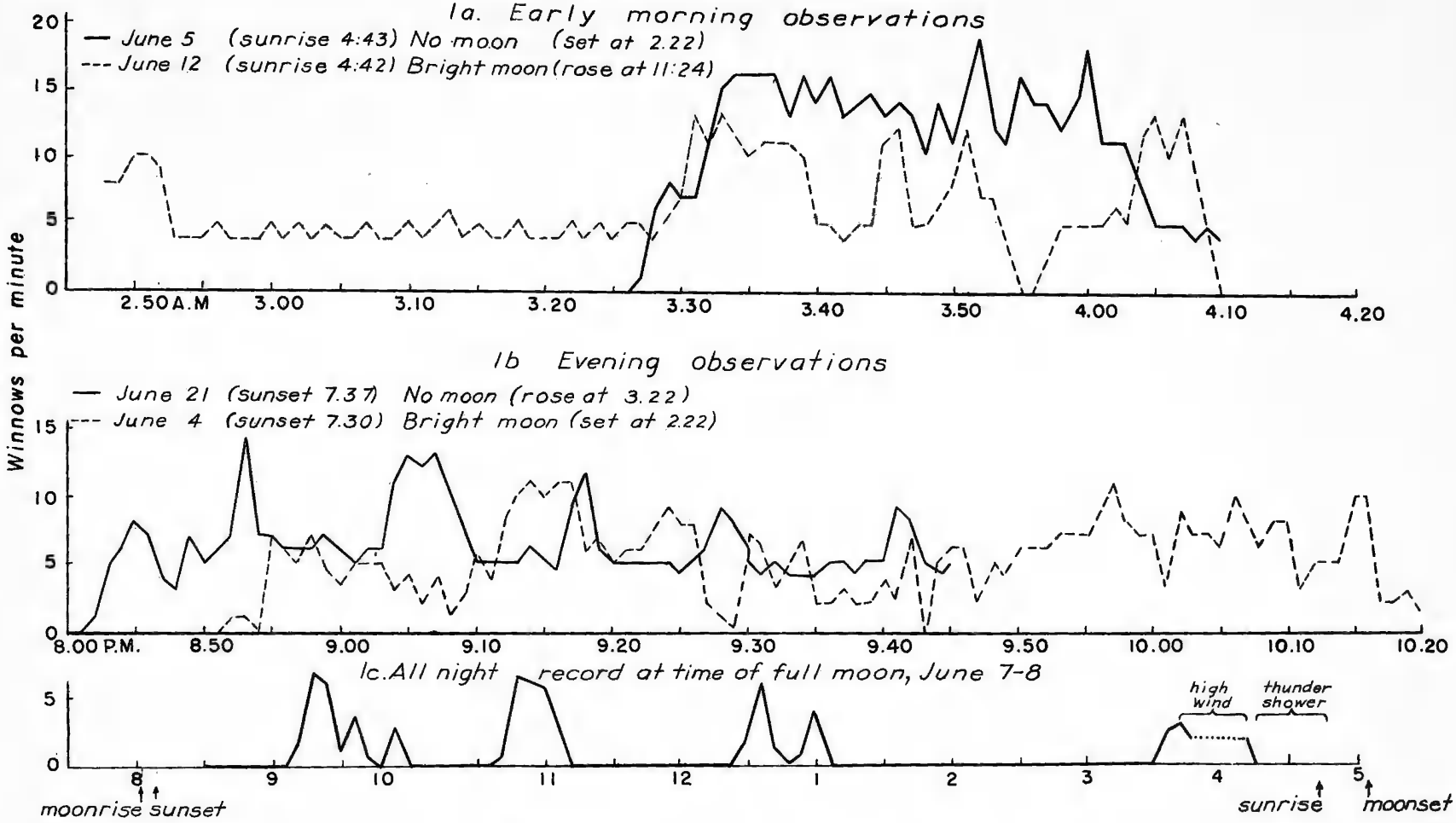

Fig. 1 SNIPE ACTIVITY AT MANITOULIN IS., ONT. JUNE 1952

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in the early morning, and a lesser peak in the evening. Winnowing at other times of the day or night was so sporadic as to give no indication of the number of pairs actually present. Figure 1 gives a comparison of winnowing activity in the evening as compared with the early morning. The heavy lines in figure 1a and 1b portray the amount of winnowing on a fairly typical morning or evening, whereas the dashed lines show how the presence of a bright moon will spread out the winnowing period and reduce the amount of winnowing at the usual time. Observations are depicted in terms of number of winnowing calls heard per minute (Eastern Standard Time), rather than the actual number of birds winnowing. The average frequence of winnowing was about 5 per minute, so "5" on the vertical scale indicates steady winnowing by one male, "10" corresponds to two males, and "15" means that all three males were performing. A typical pattern for a single bird is shown between 2:55 and 3:28 a.m. in Figure 1a.

Four evening and six early morning counts made during favorable weather conditions showed that evening winnowing started between 25 and 62 minutes after sunset and continued until 62 to 78 minutes after sunset, whereas morning winnowing started from 70 to 88 minutes before sunrise and lasted until 30 to 46 minutes before sunrise. The usual winnowing periods ran from 40 to 70 minutes after local sunset, and from 75 to 35 minutes before sunrise. The heavy line in Figure 1a, is typical of the moonless morning observations; by June 22 there was a decline of one-third to one-half in winnowing.

The evening data were much more variable, and no one night could be considered typical. The time of starting and the total duration of activity were extremely variable, and pronounced irregularities were noted each evening. Records for June 4 and June 21 are shown in Figure 1b, and a condensed record for June 7 appears in Figure 1c. The greatest evening activity took place on June 21, so this date was chosen for inclusion in Figure 1b, in spite of the fact that it was comparatively late in the season. On the evening of June 14 (not pictured) there was a brief winnowing period from 9:51 to 9:58, and another from 10:18 to 10:23; during 6 consecutive minutes two of the three birds were winnowing, in 8 other one-minute periods one bird was winnowing, and for more than half of the usual 30-minute winnowing period there was no winnowing at all. The evening period, therefore, is relatively undependable as compared with the pre-dawn period.

An all night count made on the night of the full moon is shown in Figure 1c. Each entry on the graph represents an average of six consecutive minutes, rather than a single minute as in Figures 1a and 1b; the vertical scale is the same as in Figures 1a and 1b. On this particular night not more than one bird was heard at any time. Unfortunately, a thunderstorm disrupted observations just at the start of the pre-dawn winnowing period; one or more birds were winnowing actively during the period shown by the dotted line, but high winds made it almost impossible to hear them.

Time of Year

The earliest date on which nesting populations can be determined from a study of winnowing birds was not ascertained, as no observations were made on Manitoulin Island during the latter half of May. Indications are that winnowing counts made during April and the first half of May include transient individuals and so cannot be relied upon as indicators of nesting populations. Certainly by June 1, and most likely by a week or ten days prior to that time at the latitude of Manitoulin Island (46° n. lat.) the transient individuals have passed by. Winnowing was in full swing during the first week in June, but by the 15th of that month there were indications that it was starting to subside. Up to the time of my departure on the 23rd, however, it had not subsided much more than one-third from the peak of activity in early June.

Winnowing does not necessarily cease when the young birds reach flying age, since one male was still performing regularly ten days after its young were flying. A. C. Bent in his "Life Histories of North American Shore Birds" (Bull. 142, U.S. National Museum, 1927) gives the peak dates for eggs as May 12 to June 2 in Utah, May 28 to June 10 in Alberta, and June 3 to June 14 in the Magdalen Islands, Quebec. Allowing for an incubation period of 20 days, a downy young caught on June 3 on Manitoulin Island was one to two weeks earlier than would have been expected. This early nesting may have been due to the abnormally early spring in that area this year -- or possibly nesting begins earlier in that area than would be expected from the dates cited by Bent.

Distance between Stops

Winnowing snipe under ideal conditions were audible for a distance of one-half mile by actual test. This means that to eliminate likelihood of duplication listening stops should be spaced one mile apart. If one minute were spent in listening and two minutes in driving, ten stops could be covered in a 30-minute period. In most areas accessible to highways, however, there is insufficient snipe habitat for setting up a ten-mile route. Therefore, it may be expedient to adopt a shorter route, a longer listening period, or both. If stops are spaced one-half mile apart, care must be taken to avoid duplication.

Length of Stops and Number of Stops

A statistical analysis was made of the data obtained at one station during the height of the winnowing period on the mornings of June 4 and 5 and the evening of June 4. The coefficient of variation was computed for stops of one, two, three, four, and five minutes duration in both morning and evening, during the periods from 70 to 40 minutes before sunrise and 45 to 65 minutes after sunset, respectively. The number of stops required to limit results to a sampling error of 10 percent

was computed from the formula $n = \frac{t^2 C^2}{p^2}$ where t is the number of standard errors for a 95 percent probability of occurrence (roughly 2, but varying according to the size of each sample), C is the coefficient of variation, and p is 10 (the percent of sampling error allowed).

Table 1.--Number of stops required to obtain snipe population within a sampling error of 10 percent

Length of Stop in Minutes	Morning		Evening	
	Coefficient of Variation	Number of Stops	Coefficient of Variation	Number of Stops
1	18.8%	14	35.3%	54
2	16.7	12	33.3	55
3	12.9	7	26.4	39
4	9.1	4	22.2	33
5	0	1	24.7	47

As shown in Table 1, a single stop of five minutes during the morning peak should be sufficient to record the total number of winnowing males at any location when this number is in the vicinity of three males. If the number of pairs at a given stop is considerably larger than this a longer listening period would be called for; data for this condition are not yet available. The number of stops necessary to obtain a reliable count during the evening winnowing period appears to be prohibitive.

In cases where it is convenient to cover a transect route on several mornings, the length of each stop can be adjusted to the length of the route in order that the entire winnowing period may be utilized. For instance, if the route contains five stops one mile apart, two minutes could be allotted for driving between stops and four minutes for listening at each stop; Table 1 indicates that four trips would be necessary to obtain sufficient data from each stop. Similarly, if the route contained seven stops one-half mile apart, three minutes could be spent at each stop, but it would require seven trips to obtain the required data. Since four stops could be completed in a single morning by spending five minutes at each one, this method appears to be more practical for general use than a transect with more stops of shorter duration. Further research on the transect method may reveal that this will be an important tool in detecting annual changes in abundance, but until enough data have been assembled to permit statistical analysis, the optimum number of trips per route and minutes per stop cannot be determined.

Observations on the principal Manitoulin Island study area indicated that 87 percent of the snipe present were recorded during the average one-minute stop at the peak of morning activity, as compared with 45 percent for a one-minute period during the evening peak. Whether these percentages are sufficiently typical for obtaining an estimate of the actual number of birds present in a given area remains to be determined. Preliminary investigations in areas where only one pair of snipe is present suggest the likelihood that winnowing counts are less reliable in this case since the presence of two or more males appears to act as a stimulus for winnowing.

Summary

1. Breeding ground transects, or area studies must be conducted according to rigid specifications if they are to yield significant results.

2. Winnowing counts should be made between the termination of the spring migration period and the time the young birds are about two weeks old. In the northern states and southern Canada this would be roughly from May 20 to June 20, with the optimum time the first ten days of June. These dates are subject to further investigation, and probably vary a week or more due to local or widespread weather conditions or water levels in any particular year.

3. The daily peak of winnowing occurred during a 40-minute period extending from 75 to 35 minutes before local sunrise time; if 5 minutes are dropped from each end of this period to allow for individual variation, the remaining 30 minutes were characterized by almost continuous winnowing by all three birds in the area which was most intensively covered. This appears to be the period most suited for breeding ground census work.

4. A lesser and shorter peak occurred during the period from 40 to 70 minutes after sunset. Seldom were more than two out of three males in the air at once. The great variability of activity from minute to minute and from one evening to another indicates the necessity of making four or more times as many evening counts to obtain the same accuracy as during the early morning peak. Winnowing at other times of the day gives little indication of the number of pairs present.

5. The presence of a bright moon encourages winnowing at other hours of the night and reduces the amount at the usual times.

6. The exact manner of coverage can be adapted to specific local conditions. The minimum number of stops at one listening station necessary to provide significant data for listening periods of 1, 2, 3, 4, and 5 minutes during the morning and evening peaks have been computed from the Manitoulin observations and will serve as an approximate indication of the amount of coverage required until further data

are available. It appears likely that a single period of 5 minutes under suitable weather conditions, during the pre-dawn peak and at the height of the winnowing season is sufficient to reveal the number of winnowing snipe at any given location. A considerably longer period would be necessary to record the answering females and so definitely establish the presence of a breeding pair.

7. Under ideal conditions winnowing snipe can be heard for one-half mile, indicating that to avoid likelihood of duplication, stops should be spaced one mile apart. Stops at one-half mile intervals would be suitable provided that the observers were aware of the possibility of duplication when birds were heard with an angle of 60° from the line connecting two adjacent stops.

WILSON'S SNIPE BREEDING GROUND STUDIES IN NORTHERN STATES IN 1952

Chandler S. Robbins

U. S. Fish and Wildlife Service

At the request of the Fish and Wildlife Service, several State and Federal fish and game research workers and amateur ornithologists conducted snipe counts during the spring and summer in the states of Minnesota, Michigan, Colorado and Idaho. The Idaho investigations by Thomas D. Burleigh are summarized elsewhere in this report.

Although it had been suggested that the best period for censusing nesting snipe would be from mid-May to the end of June, observations both before and after this period were also encouraged in order to obtain further information on the duration of the spring migration and on the period of peak activity of the nesting birds.

The majority of censuses received were conducted in April or early May, many of them in conjunction with population studies of the Woodcock, Ruffed Grouse or other game birds. The data show that April and early May winnowing in these areas is done primarily by transient individuals, and that even the late May counts must be carefully examined to determine whether transients are included.

Since so few winnowing counts were made after the conclusion of the migration period, the details will not be published this year. It is hoped that many of these same areas can be visited during the pre-dawn winnowing period in early June of subsequent years and thus supply data which can be used for future comparisons.

The cooperation of Dr. Arnold B. Erickson of the Minnesota Department of Conservation and of all other participants is gratefully acknowledged. The following persons contributed one or more breeding ground counts: Dr. Lawrence H. Walkinshaw, Harold S. and Catherine Hartley, Mrs. H. J. Wagner, J. K. Bronoel, P. B. Hofslund, Walter H. Petraborg, L. W. Krefting, Forrest B. Lee, Lester T. Magnus, LeRoy Angell, Gerald Bue and R. Meyerding. Appreciation is also expressed to the many other observers who furnished helpful information about the status of the Wilson's Snipe in their localities.

WILSON'S SNIPE BREEDING POPULATION STUDY AT GRAYS LAKE, IDAHO - 1952

Thomas D. Burleigh

U. S. Fish and Wildlife Service

This study, begun in 1951, was continued in 1952, the same procedure being followed throughout. Gray was reached at noon on May 26, and the first count made that evening. In order that the results be as uniform as possible, the study was continued for eight days, the same period decided upon for the initial study made in 1951. Accordingly, up to and including June 2, a daily count was made of the breeding snipe population in the open marsh bordering Grays Lake.

Previous inquiry had revealed the fact that the past winter at Gray had been characterized by a very heavy snowfall with an unusually high water content, this resulting in the marsh area surrounding the lake being flooded to a much later date than is usually the case. For this reason, the 1952 study was started at a later date than was originally planned, and this delay was found to be well justified. On my arrival at Gray on May 26, it was at once apparent that the water level of the lake was still abnormally high for this late date, there still being spots where the marsh was flooded to the edge of the highway paralleling the lake. On talking with the ranchers of this community, I learned that had I come a week earlier I would have found the water level considerably higher than it then was. It is customary each year for a certain amount of water to be drained from the lake for irrigation purposes, but this year this was not done until finally, with pastures under water and the future of the livestock industry seriously threatened, it was necessary to request that a certain amount of water be drained off to remedy this condition. This was done just a week before my arrival, but there is little question that the effect of this abnormally high water reduced materially the number of snipe breeding in this area.

Summarizing briefly, the following facts indicate a radically different breeding snipe population for 1952 than was recorded in 1951. Regardless of the most favorable weather conditions, and of periods of maximum activity on the part of the "winnowing" males, the largest count on any one night was 10 birds on May 30. On most nights, the count varied between 5 and 8 males in the air at the established stations. Only 3 were heard between 7.40 and 8.50 (P.M.) on May 26. That night, although clear, was characterized by a cold blustery west wind. This was in striking contrast to 1951, when under optimum conditions twice this number were recorded at these same stations, with a maximum of 28 counted on May 21. That the high water was responsible for this reduction in numbers was a conclusion soon reached for breeding territories selected this year differed markedly from 1951. That

year practically all the "winnowing" males were carrying on their erratic flight over stretches of marshy meadow bordering the lake. This second year, these areas were without exception largely under water at a time when nesting activities would be normally under way, and through necessity breeding territories were established in areas of marsh bordering the few streams flowing into the lake or covering small isolated pockets at the foot of ridges. It was soon evident that all available nesting sites were being used by at least one, and not infrequently two, pairs of snipe, but as these were relatively limited in number, the breeding population was noticeably smaller than in 1951.

Another probable effect of the high water was the late date at which the various pairs, located during the daylight hours, were nesting. Plans for 1952 included finding one or more nests and getting much needed information on the actions of the male as incubation progressed, and when the young left the nest, but it was soon apparent that this would have to be attempted another year. Little difficulty was experienced in flushing the birds in areas of marsh over which the male flew after dark, but almost without exception both birds would be seen, and their actions indicated that up to the time of my departure, few, if any birds, were incubating. In this connection it was of interest to note that other birds nesting in the marsh bordering Grays Lake were equally late this year. In 1951 for example, Long-billed Curlews had half-grown young by the latter part of May, whereas in 1952, no young were seen up to the first of June, and the females, apparently still incubating, were conspicuous by their absence.

Since there has been some question as to the reliability of counting "winnowing" males as an index to breeding pairs, a careful study was made of this courtship flight. The area of marsh over which the male flew at night was carefully marked, and the following day both birds were sooner or later flushed from this area. Experience soon showed that the early morning hours were most favorable for finding snipe, both birds being active and often much in evidence (depending to some extent on weather conditions) until eight o'clock. After that hour, they became increasingly difficult to find, and from the middle of the morning until late afternoon (usually after six o'clock) were rarely seen. The practicability of half mile stations was also carefully checked, and again found to be the most reliable distance for a study of this kind. With care duplication could always be avoided, and it is felt that the counts made this year are as accurate as it is possible to make them.

BREEDING POPULATIONS OF CLAPPER RAIL AT CHINCOTEAGUE, VIRGINIA - 1952

Robert E. Stewart

U. S. Fish and Wildlife Service

Studies this year were confined to one area to check the fluctuation during the nesting season. The breeding population of Clapper Rails at Chincoteague, Virginia was greater this year than in 1951, although it still did not approach the peak of 1950. Actual counts of occupied nests in a major study area at Chincoteague during the past 3 years, yield the following figures:

1950	42 nests
1951	25 nests
1952	30 nests

The hatching success of the early nesting was very high, being comparable to the excellent hatch (94%) of 1950 and being much better than the initial hatch of 1951 (when it was less than 45%). At the end of the visit this year, 21 out of 30 nests had hatched successfully. The other 9 nests contained full or nearly full clutches, although it is probable that these included 2 or 3 that represented second nesting attempts.

It is my belief at the present time that the preservation of existing suitable habitats is the most important feature to be considered in the conservation of Clapper Rail populations. It is doubtful if hunting pressure has any appreciable permanent effect on the population. The law of diminishing returns seems to work very well for this species. Because the Clapper Rail cannot be considered a first-rate game bird, and since rail hunting is ordinarily a rather arduous sport, the average sportsman is not interested in rail hunting unless he feels assured that he can obtain really large numbers in a relatively short time. Another protective feature is the fact that Clapper Rails inhabit certain types of marsh (such as needle rush, Juncus roemerianus) that are not hunted due to the difficulty of traversing the area. Such areas would act as reservoirs in serving to repopulate local adjacent marshes that have been excessively hunted during any one year.

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